

## Key Instant Recall Facts (KIRFs)

### What are KIRFs?

Our KIRFs have been designed to support the development of the core declarative knowledge that underpins much of the maths work in schools. Each objective has been carefully selected based on the National curriculum. Key instant recall facts help enormously with mental agility within Maths lessons and when children move onto written calculations, knowing these facts is very beneficial. These facts are particularly useful when calculating, be it adding, subtracting, multiplying or dividing.

The rote learning of certain numeracy facts, such as times tables, has always been a crucial part of maths development. However, alongside the times tables there are many other key number facts that are needed to make complex reasoning and problem solving much more accessible.

Each half term children will be given a different KIRF objective to practise and learn in school and at home. They will be given the opportunity to recall these at the start of every maths lesson. For your children to become more efficient in recalling them easily, they need to be practiced frequently and for short periods of time. **Little and often is key!**

Over the course of primary school - if the KIRFs are developed fully - children will be more confident with number work, understand its relevance, and be able to access the curriculum much more easily. They will be able to apply what they have learnt to a wide range of problems that confront us regularly.

### Why practise the KIRFs?

Working memory plays an essential role in children's mathematical learning (De Smedt et al., 2009) but it is a system with limited capacity. When a mathematical task requires processing, or actively maintaining, too much information in the working memory, it can lead to cognitive overload.

The repetition needed to learn the KIRFs by heart should allow children to store this knowledge into their long-term memories, helping them to free up their working memories more in their lessons. If a child knows their key facts by heart, they can focus on learning new steps or procedures, and then develop their reasoning and problem-solving skills. Once these facts are committed to long term memory it becomes a matter of retrieval.

### How to practise KIRFS:

This KIRFs handbook includes practical ideas to assist your child in grasping the key facts and contains helpful suggestions of ways in which you could make this learning interesting and relevant. KIRFs are not designed to be a time-consuming task and can be practised anywhere – in the car, walking to school, etc. Regular practice - **little and often** – helps children to retain these facts and keep their skills sharp. Throughout the half term, the KIRFs will also be practised in school and your child's teacher will assess whether they have been retained. However, please note that the practise of KIRFs should be viewed as a tool for retrieval, not a formal assessment.

You do not need to practise them all at once; perhaps you could have a fact of the day. If you would like more ideas, please speak to your child's teacher.

## Year 6

<https://ttrockstars.com/>

Objective: I know the multiplication and division facts for all times tables up to  $12 \times 12$

- Songs and Chants – You can buy Times Tables CDs or find multiplication songs and chants online.
- You can also use Education City songs and websites [www.timestables.co.uk](http://www.timestables.co.uk) [www.timestables.me.uk](http://www.timestables.me.uk) and [www.conkermaths.org](http://www.conkermaths.org)
- Use memory tricks – For those hard-to-remember facts, [www.multiplication.com](http://www.multiplication.com) has some strange picture stories to help children remember.
- Speed challenge – Take two packs of playing cards and remove the kings. Turn over two cards and ask your child to multiply the numbers together (Ace = 1, Jack = 11 and Queen = 12). How many questions can they answer correctly in 2 minutes?
- Practise regularly and see if they can beat their highest score.
- Online games – Activities on [www.educationcity.com](http://www.educationcity.com) [www.conkermaths.org](http://www.conkermaths.org) [www.timestables.co.uk](http://www.timestables.co.uk) and [www.timestables.me.uk](http://www.timestables.me.uk)

Objective: I can multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3dp

- It is tempting to tell children that to multiply by ten or one hundred it is just a case of adding zeroes to the end of a number. This way of thinking, however, can cause problems when they are trying to multiply and divide decimal numbers as the rule does not work for these numbers.
- The best way to understand the process for multiplying by ten or one hundred is to show each digit moving in the place value table (place value shift). This rule also works for decimals.

Objective: I can derive multiplication and division facts using decimal numbers (e.g.  $8 \times 0.7 = 5.6$ )

- Use prior knowledge to create fact families – If your child knows one fact (e.g.  $7 \times 8 = 56$ ), can they tell you the other three facts in the same fact family?  $7 \times 0.8 = 5.6$ ,  $8 \times 0.7 = 5.6$ ,  $7 \times 0.08 = 0.56$  and  $8 \times 0.07 = 0.56$

Objective: I know all previous number bonds including decimals

- Buy one get three free – If your child knows one fact (e.g.  $0.7 + 0.3 = 1$ ), can they tell you the other three facts in the same fact family?
- Use number bonds to 10 – How can your number bonds to 10 help you work out number bonds to 100?

Objective: I know the decimal and percentage equivalents of the fractions  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{3}{4}$ ,  $\frac{1}{3}$ ,  $\frac{2}{3}$ , tenths and fifths

- Make some cards with equivalent fractions, decimals and percentages. Use these to play the memory game or snap. Or make your own dominoes with fractions on one side and decimals/percentages on the other.

Objective: I can identify the properties of 3D shapes

- Children need to know faces, edges and vertices.
- Practise identifying what shapes can be found in the home and identify properties.

# YEAR 6

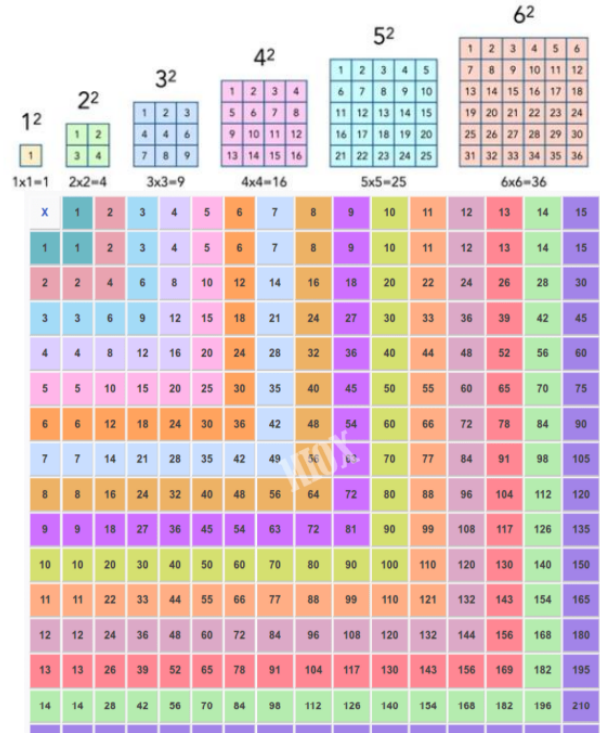
	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 6	I know the multiplication and division facts for all times tables up to $12 \times 12$	I can multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3dp	I can derive multiplication and division facts using decimal numbers (e.g. $8 \times 0.7 = 5.6$ )	I know all previous number bonds including decimals	I know the decimal and percentage equivalents of the fractions $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{3}{4}$ , $\frac{1}{5}$ , $\frac{2}{5}$ , tenths and fifths	I can identify the properties of 3D shapes

## Related Multiplication facts.

An example might be that if I know that  $5 \times 7 = 35$ , then I also know the following related facts.

- $7 \times 5 = 35$
- $35 \div 5 = 7$  and  $35 \div 7 = 5$
- $50 \times 7 = 350$  and  $5 \times 70 = 350$
- $0.5 \times 7 = 3.5$  and  $5 \times 0.7 = 3.5$
- $0.05 \times 7 = 0.35$  and  $5 \times 0.07 = 0.35$  and  $0.5 \times 0.7 = 0.35$ , etc.

For each of the multiplication facts above, there are also related division facts.



## Multiplying and Dividing by 10, 100 and 1000

10 000	1000	100	10	1	•	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
					•			

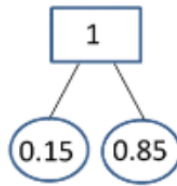
### Multiplying

X 10 digits move LEFT 1 space  
 X 100 digits move LEFT 2 spaces  
 X 1000 digits move LEFT 3 spaces



### Dividing

÷ 10 digits move RIGHT 1 space  
 ÷ 100 digits move RIGHT 2 spaces  
 ÷ 1000 digits move RIGHT 3 spaces



$$0.15 + 0.85 = 1$$

$$0.85 + 0.15 = 1$$

$$1 - 0.15 = 0.85$$

$$1 - 0.85 = 0.15$$